IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Art Unit: not assigned
Philippe C. Byrnes	Examiner: not assigned
Serial No. Not Assigned	**PRELIMINARY AMENDMENT**
Filed: November 29, 2001	
For: *Automatic Traffic and Quality of Service Control System for Communications Networks*	Date: November 29, 2001

BOX PATENT APPLICATION FEE
Assistant Commissioner for Patents
P.O. Box 2327
Arlington, VA 22202

Sir:

Please amend the referenced application as follows:

IN THE SPECIFICATION:

Please amend the paragraphs below to read as follows:

Paragraph beginning on page 17, line 10:

In step **402** the paths found as traffic intensity geodesics in step **401** are projected by the ATCC **205** on to a map of the actual links of the computer communications network **200**, the topology of which may have been obtained from the topology-adaptive routing protocol used in network **200**, from human operators, or other sources such as network management applications. The topology of network **200** is stored in memory by the ATCC **205**. A variety of techniques can be employed in step **402** for projecting the traffic intensity geodesics on to the actual links of the computer communications network, including least-squares minimization, linear programming, etc. Whichever technique is used, in step **402** the

ATCC **205** finds the network links "closest" to the traffic intensity geodesics. The ordered sequence of these links constitutes a route and is stored in memory by the ATCC **205**.

Paragraph beginning on page 18, line 18:

This is effected by the ATCC **205** in step **406**. The ATCC **205**'s determination of whether an imbalance is persistent and what level of persistence qualifies will depend on the "rent vs. buy" cost tradeoff: it is less expensive to "rent" temporary bandwidth if the bandwidth deficit does not last for long whereas if the bandwidth deficit lasts longer then the optimal actuation is to actuate the bandwidth and/or topology of the computer communications network in step **407**. The ATCC **205** uses the traffic intensity surface, found in step **308** and stored in memory, and the past "history" of the traffic intensity surface similarly stored in memory, to determine the persistence of the imbalance for each region of the computer communications network **200**. This information is sent to the bandwidth manager **209**. The ATCC **205** may display the imbalances graphically using feature **108**.

Paragraph beginning on page 19, line 3:

In step **409** the ATCC **205** determines the locations of the content caches and/or the times when each cache should be active, thereby actuating the traffic load in the network. The ATCC **205** effects the changes to the content caches **207** by sending this information via communication network **200** to the cache-content manager **208** responsible for the actuation of cache locations and for redirection of content requests to the optimal content cache **207**. If a content cache **207** that is active, meaning end user requests are directed to it by the cache redirection mechanisms, in a region of the computer communications network that is congested, meaning it suffers from a bandwidth deficit, then by moving the content cache and/or redirecting content requests to replicated caches **207** located in regions of the network that are not congested the result is to have actuated the quality of service variables since traffic will be redirected away from the congested region(s) of the network and toward regions that have more idle transport bandwidth.

REMARKS

This amendment is being made to correct minor typographical errors in the specification discovered after signing of the Declaration. The changes do not make any material changes to the

specification.

It is respectfully requested that this amendment be entered.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

The Commissioner is hereby authorized to charge any fees determined to be due in connection with this communication to our Deposit Account No. 06-1300 (Order No. A-69593/AJT).

Respectfully submitted,

William E. Nuttle, Reg. No. 42,943
/**FOR**/ Aldo J. Test, Reg. No. 18,048

FLEHR HOHBACH TEST ALBRITTON & HERBERT LLP
Four Embarcadero Center, Suite 3400
San Francisco, CA 94111-4187
Telephone: (650) 494-8700

IN THE SPECIFICATION:

Please amend the paragraph beginning on page 17, line 10, as follows:

In step **402** the paths found as traffic intensity geodesics in step **401** are projected by the ATCC **205** on to a map of the actual links of the computer communications network **200**, the topology of which [has] may have been obtained from the topology-adaptive routing protocol used in network **200**, from human operators, or other sources such as network management applications. The topology of network **200** is stored in memory by the ATCC **205**. A variety of techniques can be employed in step **402** for projecting the traffic intensity geodesics on to the actual links of the computer communications network, including least-squares minimization, linear programming, etc. Whichever technique is used, in step **402** the ATCC **205** finds the network links "closest" to the traffic intensity geodesics. The ordered sequence of these links constitutes a route and is stored in memory by the ATCC **205**.

Please amend the paragraph beginning on page 18, line 18 as follows:

This is effected [in] by the ATCC **205** in step **406**. The ATCC **205**'s determination of whether an imbalance is persistent and what level of persistence qualifies will depend on the "rent vs. buy" cost tradeoff: it is less expensive to "rent" temporary bandwidth if the bandwidth deficit does not last for long whereas if the bandwidth deficit lasts longer then the optimal actuation is to actuate the bandwidth and/or topology of the computer communications network in step **407**. The ATCC **205** uses the traffic intensity surface, found in step **308** and stored in memory, and the past "history" of the traffic intensity surface similarly stored in memory, to determine the persistence of the imbalance for each region of the computer communications network **200**. This information is sent to the bandwidth manager **209**. The ATCC **205** may display the imbalances graphically using feature **108**.

Please amend the paragraph beginning on page 19, line 3 as follows:

In step **409** the ATCC **205** determines the [location] locations of the content caches and/or the times when each cache should be active, [are actuated and] thereby [the traffic load in the network is actuated as well] actuating the traffic load in the network. The ATCC **205** effects the changes to the content caches **207** by sending this information via communication network **200** to the cache-content

manager **208** responsible for the actuation of cache locations and for redirection of content requests to the optimal content cache **207**. If a content cache **207** that is active, meaning end user requests are directed to it by the cache redirection mechanisms, in a region of the computer communications network that is congested, meaning it suffers from a bandwidth deficit, then by moving the content cache and/or redirecting content requests to replicated caches **207** located in regions of the network that are not congested the result is to have actuated the quality of service variables since traffic will be redirected away from the congested region(s) of the network and toward regions that have more idle transport bandwidth.